

# Subsequent Report of Abandonment

## FILE NOTATIONS

Entered in NID File

Entered On S R Sheet

Location Map Pinned

Card Indexed

I W R for State or Fee Land

Checked by Chief

Copy NID to Field Office

Approval Letter

Disapproval Letter

## COMPLETION DATA:

Date Well Completed

Location Inspected

OW..... WW..... TA.....

Bond released

GW..... OS..... PA.....

State of Fee Land

## LOGS FILED

Driller's Log

Electric Logs (No. )

E.....

I.....

E-I.....

GR.....

GR-N.....

Micro.....

Lat.....

Mi-L.....

Sonic.....

Others.....

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

## APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

## 1a. TYPE OF WORK

DRILL ☒DEEPEN ☐PLUG BACK ☐

## b. TYPE OF WELL

OIL  
WELL ☐GAS  
WELL ☐

OTHER Relief Well

SINGLE  
ZONE ☐MULTIPLE  
ZONE ☐

## 2. NAME OF OPERATOR

Pacific Natural Gas Exploration Company

## 3. ADDRESS OF OPERATOR

P. O. Box 2436, Salt Lake City, Utah 84110

## 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)\*

At surface 2267' FSL &amp; 955' FWL Sec 2, T 7S, R 21E S.L.M.

At proposed prod. zone (See attached memo)

## 14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

14 Miles South of the Town of Vernal

## 15. DISTANCE FROM PROPOSED\*

LOCATION TO NEAREST  
PROPERTY OR LEASE LINE, FT.  
(Also to nearest drig. unit line, if any)(See attached  
memo)

## 16. NO. OF ACRES IN LEASE

469.80

18. DISTANCE FROM PROPOSED LOCATION\*  
TO NEAREST WELL, DRILLING, COMPLETED,  
OR APPLIED FOR, ON THIS LEASE, FT.

421'

## 19. PROPOSED DEPTH

3600'

## 21. ELEVATIONS (Show whether DF, RT, GR, etc.)

5044.58' Ground

## 23.

## PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH
12-1/4"	8-5/8"	32#	537'
7-7/8"	4-1/2"	11.60#	3600'

(See attached memo and drilling proposal)

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. If proposal is to plug back, give blowout preventer program, if any.

24.

SIGNED

R. D. Geddes

TITLE

Division Manager

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

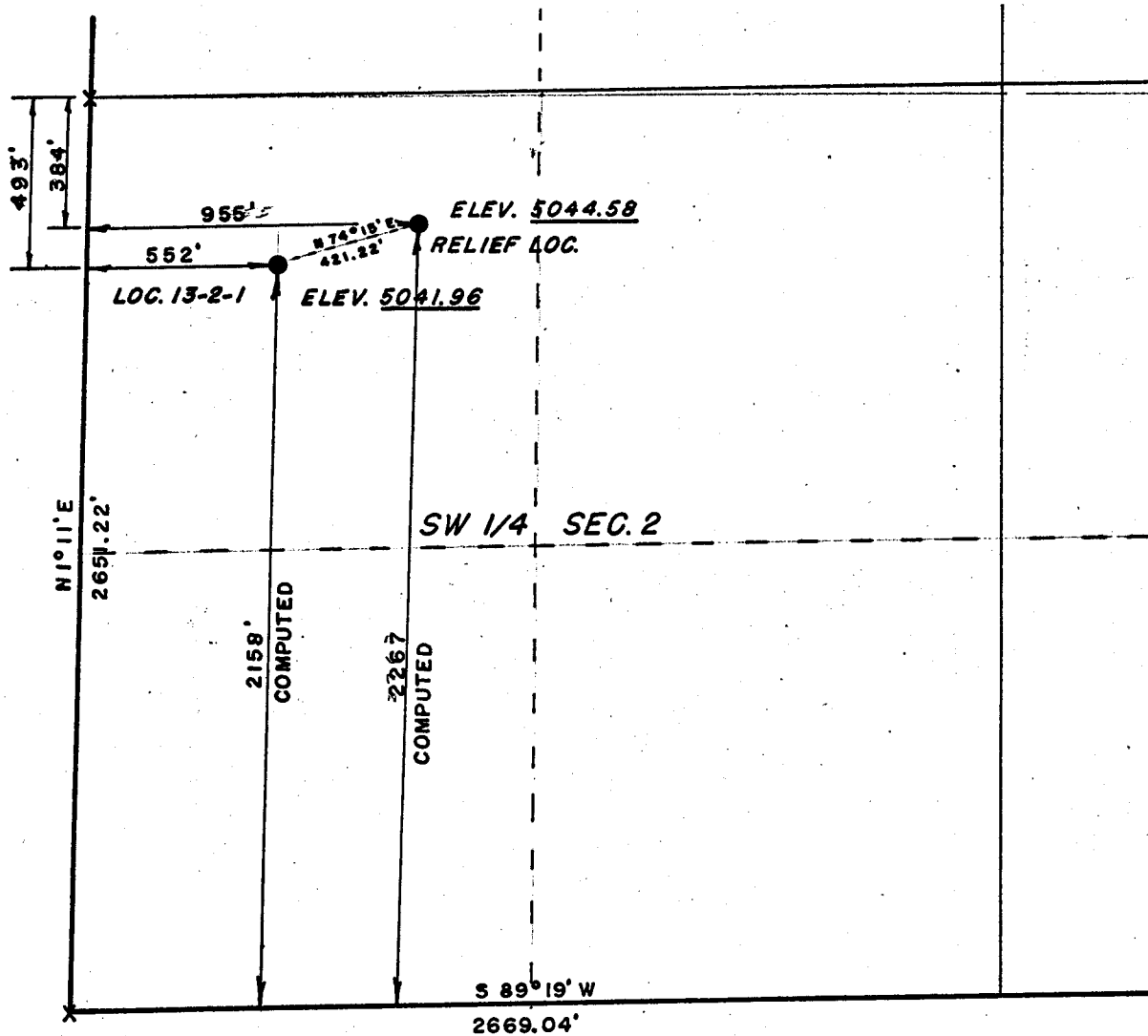
APPROVED BY

TITLE

CONDITIONS OF APPROVAL, IF ANY:

\*See Instructions On Reverse Side

T 7 S, R 2 I E, S L B & M



X = Corners Located (brass caps)

Scale: 1" = 500'

UINTAH ENGINEERING  
& LAND SURVEYING

P. O. Box 330  
Vernal, Utah

This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.

*Nelson Marshall*  
Registered Land Surveyor  
Utah Registration No. 2454

PARTY  
Gene Stewart  
LC. Kay  
WEATHER Cold

SURVEY  
Pacific Natural Gas Exploration Co. Well 13-2-1,  
and location of Relief Well, as shown in the NW $\frac{1}{4}$ ,  
SW $\frac{1}{4}$ , Sec. 2, T7S, R21E, SLB&M.

DATE Dec. 20, 1964  
REFERENCES  
G.L.O. Township plat  
Approved 5/1/1964  
FILE Pacific Nat.

Exhibit 1

**PROPOSED DRILLING PROGRAM  
FOR  
HORSESHOE BEND NO. 13-2-2 (Relief Well)**

1. Build location 400' to 450' from Horseshoe Bend No. 13-2-1 location.
2. Move in, rig up and drill approximately 500' of 12-1/4" hole with gel and water.
3. Run and cement 500' of 8-5/8", 24#/foot, J-55, S.T.&C. casing with sufficient quantity of cement so that circulation will be obtained at surface (run 50 per cent excess cement).
4. W.O.C. 12 hours. Install B.O.P. and pressure test with 1500# for 15 minutes. After 24 hours total W.O.C. time, drill ahead with 7-7/8" bit using mud as a circulating medium.
5. The 7-7/8" hole will be deviated from approximately 1400' to approximately 3560' so that the ultimate chance of interception with the 13-2-1 hole will be achieved.
6. The mud will be kept at:

<u>Depth</u>	<u>Viscosity</u>	<u>Weight #/Gal.</u>	<u>W.L.</u>	<u>pH</u>
0 - 500'	70	N.C.	N.C.	N.C.
500'-1200'	40	9-9.4	10	9
1200'-2800'	40-45	9-9.4	6-8	9-9.5
2800'-T.D.	75-80	13-14	4-6	9-9.5

7. B.O.P.'s will be checked every 8 hours and the positive shut-off rams will be checked each trip out of the hole.
8. After communications are achieved between the two holes, 13-14# per gallon mud will be pumped into the relief hole until mud returns are established on the original hole.
9. After the 13-2-1 well is killed with mud from the relief hole, 200 sacks of cement will be pumped into the well following the mud.
10. W.O.C. 8 hours and pressure up on plug. If circulation cannot be obtained from the relief hole through the original hole, it will be assumed that the plug is sufficient to contain the original hole until a re-entry can be initiated.
11. The entire success of this program depends on establishing communication with the Horseshoe Bend No. 13-2-1 well.
12. Assuming that the Horseshoe Bend No. 13-2-1 well is effectively controlled, the following program, designed to complete the captioned well as a gas well from  $\pm$  3560'-3570' will be undertaken at Operator's election.
13. Plug back with cement from T.D. to T.D. minus 200'.
14. Plug with cement from 1500'-1400'. Dress off plug suitably for running a whipstock.

PROPOSED DRILLING PROGRAM CONT'D.  
HORSESHOE BEND NO. 13-2-2

15. Side track directional (relief) hole and drill 7-7/8" hole vertically to 3600'.
16. Run D.S.T. to test gas sand from  $\pm$  3560'-3570'.
17. Run IES and SGR-C logs.
18. If testing and logs are favorable, run and cement 4-1/2", 11.6#, J-55, S.T.& C. casing with 200 sacks of cement.
19. Perforate as appropriate, run 2-3/8", 4.7#, J-55, E.V.E. tubing and circulate out mud with water. Well should commence flowing as mud is being circulated out.
20. Blow well to clean up.

RDG/sgw  
12-30-64

Verbal approval  
Dec 18, 1964

# PACIFIC NATURAL GAS EXPLORATION COMPANY

366 SOUTH FIFTH EAST STREET

SALT LAKE CITY, UTAH

P. O. BOX 2436 84110

January 5, 1965

Mr. P. W. Burchell  
Chief Petroleum Engineer  
The State of Utah  
Oil and Gas Conservation Commission  
348 East South Temple  
Suite 301  
Salt Lake City, Utah

Re: Horseshoe Bend No. 13-2-2  
Section 2, T 7S, R 21E  
Uintah County, Utah

Dear Mr. Burchell:

Enclosed is our application to drill the captioned well, together with the location plat and proposed drilling program. As you know, the well is being drilled as a relief hole for Well No. 13-2-1 which blew out and caught fire. The subject application and other material are being submitted at this time in accordance with our (Burchell - Geddes) verbal agreement.

After blowing out on 12-17-64 and catching fire on 12-18-64, the 13-2-1 well burned until 12-28-64. The hole apparently bridged over on that date and the gas flow ceased.

We propose to directionally drill the 13-2-2 well to a vertical depth of 3600' and bottom it approximately 420' South 74° 15' West from its surface location. This should cause it to be relatively near the bore hole of the 13-2-1 well through the interval 3560'-70' which is the approximate depth of the gas sand we believe to have blown out. We then intend to pump heavy mud into the 13-2-1 well to place it in suitable condition to be re-entered.

Provided the foregoing operation is successful, we then propose to plug back the 13-2-2 well and redrill it vertically to 3600', run casing and attempt to complete it in the interval 3560'-70'. This proposal is subject to approval from your office due to the unorthodox location for a gas well. However, we are requesting approval due to the unusual circumstances necessitating the drilling of the 13-2-2 well.

Mr. P. W. Burchell

-2-

January 5, 1965

8-5/8", 32#, J-55 surface casing has been cemented at 537' in 12-1/4" hole with 315 sacks, and we are presently drilling at a depth of 2058'.

We will advise you well in advance of the time we expect to penetrate the objective gas sand.

Very truly yours,

  
R. D. Geddes  
Division Manager

RDG/chd  
Attachments

cc: T. A. Johnson  
E. E. Loman

January 7, 1965

Pacific Natural Gas Exploration Company  
366 South Fifth East Street  
Salt Lake City, Utah

Re: Notice of Intention to Drill Well No.  
HORSESHOE BEND 13-2-2, 2267' FSL & 955'  
FWL, Sec. 2, T. 7 S., R. 21 E., Uintah  
County, Utah.

Gentlemen:

This letter is to confirm verbal approval granted by Paul W. Burchell on December 18, 1964, to drill the above mentioned relief well.

As soon as you have determined that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

PAUL W. BURCHELL, Chief Petroleum Engineer  
Office: DA 8-5771, DA 8-5772 or DA 8-5773  
Home: CR 7-2890 - Salt Lake City, Utah

Enclosed please find Form OGCC-8-X, which is to be completed if water sands (aquifers) are encountered while drilling, particularly assessable near surface water sands. Your cooperation with respect to completing this form will be greatly appreciated.

Please have the enclosed "Minimum Safety Requirements" notice posted in a conspicuous place on the drilling location.

Very truly yours,

OIL & GAS CONSERVATION COMMISSION

CLEON B. FREIGHT  
EXECUTIVE DIRECTOR

CBF:ach

cc: Max Gardner, Director, State Land Board, Salt Lake City, Utah

Harvey L. Coonts, Pet. Eng., Oil & Gas Conservation Commission, Moab, Utah

15, 076  
Petroleum Natural Gas  
Ran caliper log and found beds 223.

13-2-1 → old

set at 405 ft a bridge plug

52 ss 50-50 cack

on top of bridge plug at 405 ft

then were here on top of plug at 294

→  
Ran FES & Sonic  
Conditum hole

set square packer at 3399

Pumped in 25 bbls mud. (120)

700 psi break down pressure

CWP

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUBMIT IN  
(Other Instr  
verse side)

PLICATE\*  
s on re-

Form approved  
Budget Bureau No. 10-10474

5. LEASE DESIGNATION AND SERIAL NO.

NE 1541

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Not Applicable

7. UNIT AGREEMENT NAME

None

8. FARM OR LEASE NAME

Horseshoe Bend

9. WELL NO.

13-2-2

10. FIELD AND POOL, OR WILDCAT

Relief Well - Wildcat

11. SEC., T., R., M., OR BLK. AND  
SURVEY OR AREA

Sec 2, T 7S, R 21E

12. COUNTY OR PARISH

Uintah

Utah

SUNDRY NOTICES AND REPORTS ON WELLS  
(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.  
Use "APPLICATION FOR PERMIT—" for such proposals.)

1.

OIL WELL ☐ GAS WELL ☐ OTHER Relief Well

2. NAME OF OPERATOR

Pacific Natural Gas Exploration Company

3. ADDRESS OF OPERATOR

P. O. Box 2436, Salt Lake City, Utah 84110

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*  
See also space 17 below.)  
At surface

2267' FSL & 955' FWL

Sec 2, T 7S, R 21E, SLB-M

Uintah County, Utah

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

5044.58' Ground

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐

FRACTURE TREAT ☐

SHOOT OR ACIDIZE ☐

REPAIR WELL ☐

(Other) ☐

PULL OR ALTER CASING ☐

MULTIPLE COMPLETE ☐

ABANDON\* ☒

CHANGE PLANS ☐

SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐

FRACTURE TREATMENT ☐

SHOOTING OR ACIDIZING ☐

(Other) ☐

REPAIRING WELL ☐

ALTERING CASING ☐

ABANDONMENT\* ☐

(NOTE: Report results of multiple completion on Well  
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Intend to abandon as follows:

1. Place cement plug from 3692'-3150'
2. Place cement plug with 10% sand from 1500'-1400'
3. Flange dry hole marker to well head

(This procedure is in anticipation of re-entering the well at some later date, straightening the hole and completing as a gas well in the Uintah Sand.)

APPROVED BY UTAH OIL AND GAS  
CONSERVATION COMMISSION

DATE: 1-26-65 by Paul H. Burchell  
Chief Petroleum Engineer

18. I hereby certify that the foregoing is true and correct

SIGNED B. H. Means TITLE Completion Engineer DATE 1-25-65

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

\*See Instructions on Reverse Side

PACIFIC NATURAL GAS EXPLORATION COMPANY

COMPLETION REPORT

Well: Horseshoe Bend No. 13-2-2

Location: 2267' FSL & 955' FWL  
Section 2, T 7S, R 21E  
Uintah County, Utah

Area: Horseshoe Bend

Elevation: 5044.58' Ground

Spud Date: December 23, 1964

Completion Date: February 15, 1965

Total Depth: 3692'

Objective: Gas sand at approximately 3600'

Results: Reached total depth in gas sand and successfully pumped  
mud into formation to control blowout of No. 13-2-1 well.

Contractors: Barker Well Service, Grand Junction, Colorado  
Rocky Mountain Geo-Engineering, Grand Junction, Colorado

Geologic Tops: None picked

## SUMMARY

No geological interpretation or sample description is included in this report as the well was drilled strictly as a mechanical means of controlling the blowout which occurred in the No. 13-2-1 well.

# CHRONOLOGICAL LOG

## HORSESHOE BEND NO. 13-2-2 (Relief Hole)

- 12-21-64 - Barker Drilling Company rigging up a relief hole approximately 415' from Horseshoe Bend No. 13-2-1. Should spud before noon today.
- 12-22-64 - Picking up kelly to drill rat hole.
- 12-23-64 - Drilling at 145'. Bit #1 (DT) 12-1/4". Dev: 0° @ 120'. Mud: weight 9.1#, viscosity 45.
- 12-24-64 - Drilling at 457'. Bit #1 (DT 12-1/4") in hole. Mud: weight 9.2#, viscosity 46. Dev: 1/2° @ 172'; 1/4° @ 232'; 1° @ 292'; 3/4° @ 381'.
- 12-25-64 - Drilling at 540', 12-1/4" hole. Ran 523.82' of 8-5/8" O.D. (16 joints), 32#/foot, J-55 casing with guide shoe at 1.02', total 524.84'. Set at 536.82' K.B. Cemented with 315 sacks regular with 30% CaCl<sub>2</sub>. Plug down at 10:15 p.m. Good cement returns. Centralizers at 520', 461.91', 396.57', 329.12', 262.88', and 196.57'.
- 12-26-64 - W.O.C. Nippling up. Pressured up to 1250# for 30 minutes. Okay.
- 12-27-64 - 840', drilling.
- 12-28-64 - Drilling at 1195'. Bit #3 (OSC-3) made 411' in 19-3/4 hours. Bit #4 (DT) in hole. Dev: 3/4° @ 831', 1/2° @ 962', 1/2° @ 1082'. Mud: weight 9.7#, viscosity 45.
- 12-29-64 - Drilling at 1412', pulling whipstock. Set whipstock at 1400'. Drilling 12' off tool with 5-5/8" bit. Will pick up reamer and enlarge hole to 7-7/8". Bit #5 (YT3 7-7/8") made 55' in 3-3/4 hours. Bit #6 (OWC 5-5/8") made 12' in 2-1/4 hours. Mud: weight 9.6#, viscosity 53. Deviation and direction:
- |                  |                  |                  |
|------------------|------------------|------------------|
| 1202' 1/4° N 63W | 1321' 1/2° N 35E | 1400' 3/4° N 79E |
| 2.41' N 1.23 E   | 3.26' N 1.82'E   | 3.26' N 2.82' E  |
- 1400' -3.75' true vertical depth at 1400'. Horseshoe Bend well has been dead 25 hours. Died at 8:00 a.m. 12-28-64.
- 12-30-64 - Drilling at 1472'. Making trip in with long monel collar with near bit reamer to try and stop angle and still change course. Correction - Bit #6 is a Reed YT3. Mud: weight 9.8#, viscosity 50. Dev: 3/4° N 79E 1400'; 2-3/4° S 39W 1440', 1472' 4-1/2° S 45W.
- |              |                        |                        |
|--------------|------------------------|------------------------|
| 1411' 1-3/4° | 1410.94' True Vertical | -3.49 Vertical Section |
|              | S 33W 2.97'N 2.63'E    |                        |
| 1440' 2-3/4° | 1439.91' True Vertical | -2.34 Vertical Section |
|              | S 39W 1.89'N 1.75'E    |                        |
| 1472' 4-1/2° | 1471.81' True Vertical | - .12 Vertical Section |
|              | S 45W .12'N .02'W      |                        |

- 12-31-64 - 1540', Depth. Failed to kick off last night. Presently going in hole to drill approximately 7' of new hole and attempt to kick off again. Dev: 5-1/4° @ 1532' S 42W.
- 1-1-65 - Drilling at 1597'.
- 1-2-65 - Drilling at 1641'.
- 1-3-65 - Tripping at 1697'. Dev:
- |       |         |       |             |
|-------|---------|-------|-------------|
| 1665' | 9-3/4°  | S 70W | (8:00 a.m.) |
| 1694' | 10-3/4° | S 72W | " "         |
| 1725' | 11°     | S 75W | (4:30 p.m.) |
| 1784' | 11-1/2° | S 76W | " "         |
- 1-4-65 - Tripping for new bit at 2058'. Bit #7 (DT) made 264' in 8-1/2 hours. Mud: weight 10.3#, viscosity 58, water loss 4, 2/32" cake. Dev:
- |       |         |       |
|-------|---------|-------|
| 1813' | 11-3/4° | S 75W |
| 1873' | 12-1/4° | S 75W |
| 1934' | 13°     | S 75W |
| 1994' | 13-3/4° | S 77W |
- 1-5-65 - T.D. 2071'. Drill collars stuck at 1585'. Will attempt to back off at 1575'. Spotted 25 barrels of oil; no results. Presently backing off with McCullough. Mud: weight 9.1#, viscosity 65, water loss 4, pH 10.5, 12% oil.
- 1-6-65 - 2180', drilling. Dev: 14-1/2° @ 2132' S 80W. Mud: weight 9.6#, viscosity 65, water loss r, 2/32" cake, pH 10, 1-1/2% sand, 16% oil. Backed stuck drill collars off at 1555'. Ran bumper jars and oil jars. Bumped fish down 2'; recovered fish.
- 1-7-65 - 2439', on trip for new bit. Bit #9 (OSClG) made 210' in 8-3/4 hours. Bit #10 (OSClG) made 171' in 10-1/4 hours. Mud: weight 9.7#, viscosity 54, water loss 2, 2/32" cake, pH 10, 18% oil. Lost approximately 35 barrels mud at 2360'. Dev:
- |                 |       |
|-----------------|-------|
| 15-1/4° @ 2190' | S 80W |
| 15-1/4° @ 2250' | S 82W |
| 15-1/4° @ 2308' | S 83W |
| 15-1/2° @ 2338' | S 83W |
| 15-3/4° @ 2409' | S 83W |
| 15-3/4° @ 2439' | S 84W |
- 1-8-65 - Tripping at 2482'. Set tool at 2470'. Decreased angle 1' and direction 9°. Looks like good run. Dev: 16° @ 2469 S 85W, 15° @ 2481' S 76W. Mud: weight 9.9#, viscosity 78, water loss 2.4, 2/32" cake, pH 10, 15% oil.
- 1-9-65 - Drilling at 2538'.
- 1-10-65 - Drilling at 2736'.
- 1-11-65 - 2872', drilling. Bit #13 (Rerun BT2G) made 105' in 4 hours (2481'-2474'). Bit #14 (YT1A) made 162' in 7-1/4 hours (2474'-2736'). Bit #15 (YT3) made 99' in 7-1/4 hours (2736'-2835'). Bit #16 (YT1A) went in hole at 2835'.

1-11-65 (Con't)

Depth	Drift	Vert. Depth	Section	Drift Direction	Coordinates South	West
2502'	15°	2475.30	220.94	S 73 W	49.64	215.02
2538'	14-3/4°	2510.11	230.10	S 70 W	52.78	223.64
2562'	15°	2533.29	236.29	S 68 W	55.11	229.39
2637'	16°	2605.38	256.88	S 68 W	62.85	248.55
2736'	16-1/2°	2700.30	284.89	S 68 W	73.39	274.62
2761'	16°	2724.33	291.75	S 67 W	76.08	280.96
2810'	15-3/4°	2771.49	304.98	S 67W	81.28	293.21

1-12-65 - Drilling at 3012'. Bit #16 (YT1A) drilled from 2835'-2921' (86') in 9-3/4 hours. Bit #17 (YS1) has drilled from 2921'-3012' (91') in 8 hours. Mud: weight 9.5#, viscosity 51, water loss 2.8, 2/32" cake, pH 8, 3/4% sand, 5% oil. Mud logging unit put into operation at 2921'.

Depth	Drift	Vert. Depth	Section	Direction	South	West
2873'	15°	2832.34	321.23	S 68 W	87.39	308.33
2919'	14-1/4°	2876.92	332.51	S 68 W	91.63	318.83
2967'	13-1/4°	2923.64	343.46	S 68 W	95.73	329.03

1-13-65 - 3172', making trip. Bit #17 (YS1) drilled 132'. Bit #18 (OSClG) drilled 119' in 12 hours. Mud: weight 9.6#, viscosity 69, water loss 4, 2/32" cake, pH 9.8, 1/2% sand, 9% oil.

Depth	Drift	Vert Depth	Section	Direction	South	West
3026'	12-1/4°	2981.30	355.91	S 67 W	100.62	340.55
3085'	11-1/4°	3039.17	367.39	S 69 W	104.74	351.30
3146'	10-1/2°	3099.15	378.48	S 69 W	108.73	361.68

1-14-65 - 3334', on bottom with new bit (#20). Bit #19 (DT2G) drilled from 3172'-3334' (162') in 13-1/4 hours. Mud: weight 9.9#, viscosity 61, water loss 3.5, 2/32" cake, 1% sand, 5% oil.

Depth	Drift	Vert Depth	Section	Direction	South	West
3175'	10°	3127.71	383.51	S 70 W	110.45	366.42
3236'	9°	3187.96	393.03	S 69 W	113.87	375.33
3334'	7-1/4°	3285.18	405.33	S 67 W	118.70	386.72

1-15-65 - Depth 3404'. Awaiting parts to repair burned out clutch on pump.

Depth	Drift	Vert Depth	Section	Direction	South	West
3404'	6-1/2°	3354.73	413.15	S 64 W	122.17	393.84

1-18-65 - Depth 3692'. Lost 75 barrels mud at 3690'-3692'. Mud: weight 9.9#, viscosity 80, water loss 3, 2/32" cake, pH 10.5, 1-1/2% sand, 4% oil. Bit #24 (WT18) made 59' in 8-1/4 hours (3593'-3652'). Bit #25 (OSClG) made 40' in 6 hours (3652'-3692').

Depth	Drift	Direction	South	West
3646'	5-1/2°	S 65 W	132.86'	415.65'
3692'	5°	S 72 W	134.10'	419.46'

1-19-65 - Depth 3692'. Ran I.E.S. and Sonic-Caliper logs. Conditioned hole. Ran Halliburton DM squeeze packer on 2-7/8", 6.5#, N-80, EUE tubing and set at 3399'. Pumped in 25 barrels of mud. Break down pressure 700#, pumping pressure 400#.

- 1-20-65 - Rig on standby with two man crew. All pits full of mud.
- 1-21 thru  
2-11-65 - Rig standing by.
- 2-12-65 - Pumped in 10 barrels of mud to determine if formation is still taking fluid. Break down pressure 1000#, average pumping pressure 500#.
- 2-15-65 - Plugged well as follows:
- 15 sacks pumped below bridge plug at 3400'
  - 5 sacks regular on top of bridge plug
  - 35 sacks regular with 5 sacks sand at 1385'-1500'
  - 35 sacks regular from 586'-486', 1/2 in surface and 1/2 below surface pipe
- Presently stripping cellar. Will release Barker rig and install surface marker when cellar is stripped.
- 2-16-65 - Placed 5 sack cement plug at surface and installed dry hole marker. Rig released at 2:00 p.m. 2-15-65. Well has been abandoned in such a condition so as to allow for re-entry and re-drilling to Uinta gas sand. FINAL REPORT

VERTICAL TESTS  
HORSESHOE BEND NO. 13-2-2

<u>Depth</u>	<u>Degree Deviation</u>
120'	0
172'	1/2
232'	1/4
292'	1
381'	3/4
831'	3/4
962'	1/2
1082'	1/2
1202'	1/4 N 63 W
1321'	1/2 N 35 E
1400'	3/4 N 79 E
1411'	1-3/4
1440'	2-3/4 S 39 W
1472'	4-1/2 S 45 W
1532'	5-1/4 S 42 W
1665'	9-3/4 S 70 W
1694'	10-3/4 S 72 W
1725'	11 S 75 W
1784'	11-1/2 S 76 W
1813'	11-3/4 S 75 W
1873'	12-1/4 S 75 W
1934'	13 S 75 W
1994'	13-3/4 S 77 W
2132'	14-1/2 S 80 W
2190'	15-1/4 S 80 W
2250'	15-1/4 S 82 W
2308'	15-1/4 S 83 W
2338'	15-1/2 S 83 W
2409'	15-3/4 S 83 W
2439'	15-3/4 S 84 W
2469'	16 S 85 W
2481'	15 S 76 W
2502'	15 S 73 W
2538'	14-3/4 S 70 W
2562'	15 S 68 W
2637'	16 S 68 W
2736'	16-1/2 S 68 W
2761'	16 S 67 W
2810'	15-3/4 S 67 W
2873'	15 S 68 W
2919'	14-1/4 S 68 W
2967'	13-1/4 S 68 W
3026'	12-1/4 S 67 W
3085'	11-1/4 S 69 W
3146'	10-1/2 S 69 W
3175'	10 S 70 W
3236'	9 S 69 W
3334'	7-1/4 S 67 W
3404'	6-1/2 S 64 W

Depth

3646'  
3692'

Degree Deviation

5-1/2 S 65 W  
5 S 72 W

D.E. JENNINGS R.R. S.L.C. FILE

# HUGHES BIT RECORD

ELEVATION

SHEET 1 OF 2

FILE NUMBER

COUNTY		FIELD		STATE		SECTION		TOWNSHIP		RANGE		OPERATOR		X(1)	
UTAH		HORSESHOE BEND		UTAH		2		21E		75		PACIFIC NATURAL GAS			
CONTRACTOR		X(2)		LOCATION		SPUD		US		INTER		TOTAL DEPTH DATE		TOOL PUSHER	
3		BARKER WELL SERVICE		HORSESHOE BEND		RELIEF HOLE		12-22-64		12-28-64		1-18-65		J.W. SAMPLE	
TOOL JOINTS		GIVE SIZE & TYPE		1. D.P. 3 1/2 IF		O.D. 4 1/2		NO.		O.D.		I.D.		PUMPS	
				2. O.D.										1. C-150 - 12	
														2. EX-7 - 10	
SALESMAN		DIVISION		STOCKPOINT NO.		DO NOT USE		STATE		ZONE		FIELD		CONTRACTOR	

DO NOT USE		NO.	SIZE	MAKE	TYPE	REG	JET 32nd IN.	SERIAL	DEPTH OUT	FEET	HOURS	WT. 1000 LBS.	RPM	VERT. DEV.	PUMP PRESS.	NO. 1		NO. 2		MUD			DULL. COND.			DULLS	FORMATION CALL DATES REMARKS
AFR.	TYPE															SPM	LIN-ER	SPM	LIN-ER	WT.	VIS.	W.L.	T	B	OTHER		
12-22		1	12 1/4	SMITH	DT	✓		32989	457	457	2 1/4		250	3/4	200	55	6 1/4	53	1 1/2	91	45						12/22 Spud 10:30 PM
12-24		2	12 1/4	REED	YT3	✓		44417	545	88	2 3/4		240	3/4	200	55	6 1/4			92	45						SET 8 5/8"
12-26		3	7 7/8	HUGHES	CSC3	✓		68951	956	411	18 3/4		2		300	55	6 1/4			96	40						
12-27		4	7 7/8	SMITH	DT	✓		81509	1301	345	15 1/4				400	55	6 1/4			101	52						
12-28		5	7 7/8	REED	YT3	✓		544151	1400	99	4 3/4			1 3/4	400	55	6 1/4			101	53						
12-29		6	5 5/8	HUGHES	CWC	✓		82917	1412	12	1			1 3/4	400	55	6 1/4			102	53						
12-29		7	7 7/8	REED	YT3	✓		544088	1540	140	4				400	55	6 1/4			98	50						
12-30		RR	5 5/8	HUGHES	CWC	✓		RR#6	1540	-				5 1/4	400	55	6 1/4			96	47						
12-31		RR	7 7/8	REED	YT3	✓		RR#7	1569	29	1			5 1/2	400	55	6 1/4			98	48						
1-1-65		RR	5 5/8	Hughes	CWC	✓		RR#6	1581	12	1 1/2				450	55	6 1/4			97	49						
1-1-65		RR	7 7/8	REED	YT3	✓		RR#7	1599	30					500	55	6 1/4			96	50						
1-2		RR	5 5/8	Hughes	CWC	✓		RR#6	1611	12	1 1/4				600	55	6 1/4			98	52						
1-2		RR	7 7/8	REED	YT3	✓		RR#7	1794	201	7 1/2				700	55	6 1/4			97	55						
1-3		8	7 7/8	SMITH	DT	✓		59991	2058	264	8 1/2				700	55	6 1/4			97	56						STUCK PIPE @ 20'
1-4		9	7 7/8	Hughes	OSCIG	✓		16096	2268	210	8 3/4			15 1/4	750	55	6 1/4			96	55	4					
1-6		10	7 7/8	Hughes	OSCIG	✓		96989	2439	171	10 1/4			15 3/4	750	55	6 1/4			95	58	2					
1-7		11	7 7/8	SMITH	DT2G	✓		84249	2469	30	2			16	750	55	6 1/4			98	70	2					
1-7		12	5 5/8	Hughes	CWC	✓		198	2481	12				15	800	55	6 1/4			98	70	2					
1-8		13	7 7/8	SMITH	DT2G	✓		84342	2574	105	1 1/2		55	15	5 5/8	50	7 1/4	53	1 1/2	97	55	44					
1-9		14	7 7/8	REED	YTIA	✓		V45549	2736	162	7 1/4		55	16 1/2	800	50	7 1/4	53	6 1/2	97	13	5.2					
1-10		15	7 7/8	REED	YT3	✓		544089	2835	99	7 1/4		120	15 1/4	800	50	7 1/4			97	63	5.2					
1-11		16	7 7/8	REED	YTIA	✓		743270	2921	86	9 3/4		120	14 1/4	800	50	7 1/4			95	53	2.8					
1-12		17	7 7/8	REED	YSI	✓		V41105	3053	132	13 1/2		100	12	750	50	7 1/4			94	60	4					
1-13		18	7 7/8	Hughes	OSCIG	✓		96973	3172	119	12		120	10	750	50	7 1/4			96	51	3.5					

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# HUGHES BIT RECORD

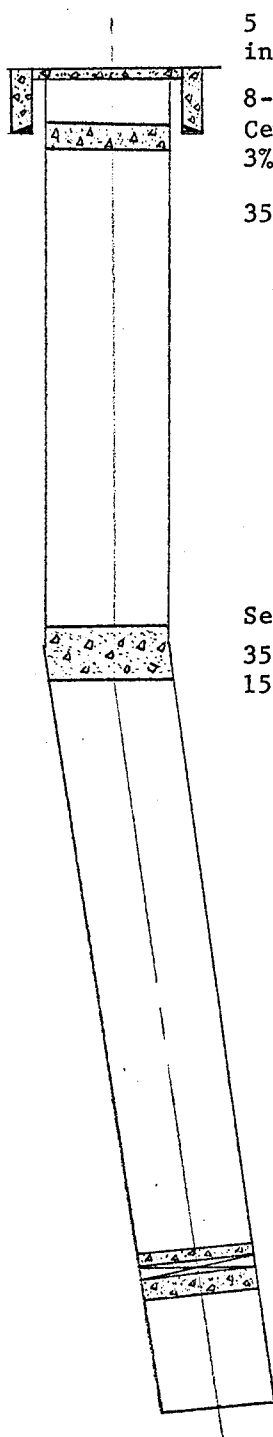
SHEET 2 OF 2

FILE NUMBER

COUNTY	FIELD	STATE	SECTION	TOWNSHIP	RANGE	OPERATOR		X(1)	
<i>UTAH</i>	<i>HUGHES BEND</i>	<i>UTAH</i>	<i>2</i>	<i>21E</i>	<i>75</i>	<i>PROF. NATURAL GAS EXP.</i>			
RIG NO.	CONTRACTOR	X(2)	LOCATION	SPUD	US	INTER	TOTAL DEPTH DATE	TOOL PUSHER	
<i>3</i>	<i>WELLS SERVICE</i>		<i>HUGHES BEND 13-2-1</i>				<i>1-18-65</i>		
TOOL POINTS	GIVE SIZE & TYPE	1.	O.D.	NO.	O.D.	I.D.	PUMPS	1.	2.
		2.	O.D.						
SALESMAN		DIVISION		STOCKPOINT NO.		DO NOT USE		STATE	ZONE
								FIELD	CONTRACTOR
								OPERATOR	DATE
								PURCHASER	

DO NOT USE			NO.	SIZE	MAKE	TYPE	REG	JET 32nd IN.	SERIAL	DEPTH OUT	FEET	HOURS	WT. 1000 LBS.	RPM	VERT. DEPT.	PUMP PRESS.	NO. 1		NO. 2		MUD			DULL. COND.			DULLS	FORMATION CALL DATES REMARKS
AFR.	TYPE	W.C.															SPM	LIN-ER	SPM	LIN-ER	WT.	VIS.	W.L.	T	B	OTHER		
<i>1-13</i>			<i>19</i>	<i>7 7/8</i>	<i>SMITH</i>	<i>DT2C-</i>	<i>✓</i>		<i>84233</i>	<i>3334</i>	<i>162</i>	<i>13 1/4</i>		<i>120</i>	<i>7 1/4</i>	<i>800</i>	<i>50</i>	<i>7 1/4</i>	<i>53</i>	<i>6 1/2</i>	<i>10.1</i>	<i>6.8</i>	<i>3.5</i>					
<i>1-14</i>			<i>20</i>	<i>7 7/8</i>	<i>HUGHES</i>	<i>OSC1G</i>	<i>✓</i>		<i>96956</i>	<i>3408</i>	<i>74</i>	<i>9</i>		<i>120</i>	<i>6 1/2</i>	<i>800</i>	<i>50</i>	<i>7 1/4</i>	<i>5</i>	<i>5</i>	<i>10.1</i>	<i>6.8</i>	<i>3.5</i>					
<i>1-15</i>			<i>21</i>	<i>7 7/8</i>	<i>SMITH</i>	<i>SV2</i>	<i>✓</i>		<i>96133</i>	<i>3453</i>	<i>45</i>	<i>6 3/4</i>		<i>70</i>	<i>6 1/4</i>	<i>800</i>	<i>55</i>	<i>1 1/4</i>	<i>5</i>	<i>5</i>	<i>10</i>	<i>6.2</i>	<i>3</i>					
<i>1-16</i>			<i>22</i>	<i>7 7/8</i>	<i>HUGHES</i>	<i>OLNV</i>	<i>✓</i>		<i>94810</i>	<i>3520</i>	<i>67</i>	<i>10 1/4</i>		<i>70</i>	<i>5 3/4</i>	<i>800</i>	<i>55</i>	<i>6 1/4</i>	<i>5</i>	<i>5</i>	<i>10</i>	<i>6.2</i>	<i>3</i>					
<i>1-16</i>			<i>23</i>	<i>7 7/8</i>	<i>SMITH</i>	<i>DT2C-</i>	<i>✓</i>		<i>77266</i>	<i>3593</i>	<i>73</i>	<i>9 3/4</i>		<i>70</i>	<i>5 3/4</i>	<i>800</i>	<i>55</i>	<i>1 1/4</i>	<i>5</i>	<i>5</i>	<i>10</i>	<i>1.2</i>	<i>3.2</i>					
<i>1-17</i>			<i>24</i>	<i>7 7/8</i>	<i>REED</i>	<i>VTIA</i>	<i>✓</i>		<i>V44943</i>	<i>3652</i>	<i>59</i>	<i>8 1/4</i>		<i>70</i>	<i>5 1/2</i>	<i>800</i>	<i>55</i>	<i>6 1/4</i>	<i>5</i>	<i>5</i>	<i>9.9</i>	<i>5.9</i>	<i>3.2</i>					
<i>1-17</i>			<i>25</i>	<i>7 7/8</i>	<i>HUGHES</i>	<i>OSC1G</i>	<i>✓</i>		<i>56419</i>	<i>3692</i>	<i>40</i>	<i>6</i>		<i>70</i>	<i>5</i>	<i>800</i>	<i>55</i>	<i>6 1/4</i>	<i>5</i>	<i>5</i>	<i>10.1</i>	<i>6.9</i>	<i>3</i>					
									<i>T.D. 1-18-65</i>	<i>3692</i>							<i>SET HALIBURTON MODEL D.M. SQUEEZE PACKER @ 3399'</i>											
																	<i>ON 2 7/8 Tubing Pump INTO FORMATION MAX 700' INJ. @ 400#</i>											

Schematic Illustration of Drilling Progress  
HORSESHOE BEND NO. 13-2-2



5 sacks cement at surface & dry hole marker installed

8-5/8", 32#, J-55 casing set at 536.82' K.B.  
Cemented with 315 sacks regular cement with  
3% CaCl<sub>2</sub>

35 sacks cement 486'-586'

Set whipstock at 1400'

35 sacks cement with 5 sacks sand from 1385'-  
1500'

5 sacks cement in top of plug  
D.M. bridge plug at 3399'  
15 sacks cement below plug

T.D. 3692' KB

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEYSUBMIT IN TRIPLICATE\*  
(Other instructions on re-  
verse side)Form approved.  
Budget Bureau No. 42-R1424

5. LEASE DESIGNATION AND SERIAL NO.

ML 1541

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Not Applicable

7. UNIT AGREEMENT NAME

None

8. FARM OR LEASE NAME

Horseshoe Bend

9. WELL NO.

13-2-2

10. FIELD AND POOL, OR WILDCAT

Relief Well - Wildcat

11. SEC., T., R., M., OR BLK. AND  
SURVEY OR AREA

Sec 2, T 7S, R 21E

12. COUNTY OR PARISH 13. STATE

Uintah

Utah

1.

OIL  
WELL ☐GAS  
WELL ☐

OTHER

Relief Well

2. NAME OF OPERATOR

Pacific Natural Gas Exploration Company

3. ADDRESS OF OPERATOR

P. O. Box 2436, Salt Lake City, Utah 84110

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*  
See also space 17 below.)

At surface

2267' FSL & 955' FWL  
Sec 2, T 7S, R 21E, SLB-M  
Uintah County, Utah

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

5044.58 GR.

16.

## Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

## NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON\*

CHANGE PLANS

## SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT\*

(Note: Report results of multiple completion on Well  
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Plugged and abandoned 2-15-65 as follows:

1. 15 sacks regular cement pumped below bridge plug set at 3400'
2. 5 sacks regular cement spotted on top of bridge plug.
3. 35 sacks regular cement with 5 sacks sand from 1500'-1385'.
4. 35 sacks regular cement from 586'-486', 1/2 in surface and 1/2 below surface pipe.
5. 5 sacks regular cement at surface with dry hole marker installed.

(This procedure is in anticipation of re-entering the well at some later date, straightening the hole and completing as a gas well in the Uintah sand.)

18. I hereby certify that the foregoing is true and correct

SIGNED B. H. MeansTITLE Completion EngineerDATE 2-17-65

(This space for Federal or State office use)

APPROVED BY  
CONDITIONS OF APPROVAL, IF ANY:

TITLE

DATE

\*See Instructions on Reverse Side

*Handwritten: 14c PAB v*

*Handwritten: A*

PACIFIC NATURAL GAS EXPLORATION COMPANY

COMPLETION REPORT

Well: Horseshoe Bend No. 13-2-2

Location: 2267' FSL & 955' FWL  
Section 2, T 7S, R 21E  
Uintah County, Utah

Area: Horseshoe Bend

Elevation: 5044.58' Ground

Spud Date: December 23, 1964

Completion Date: February 15, 1965

Total Depth: 3692'

Objective: Gas sand at approximately 3600' ✓

Results: Reached total depth in gas sand and successfully pumped  
mud into formation to control blowout of No. 13-2-1 well.

Contractors: Barker Well Service, Grand Junction, Colorado  
Rocky Mountain Geo-Engineering, Grand Junction, Colorado

Geologic Tops: None picked

## SUMMARY

No geological interpretation or sample description is included in this report as the well was drilled strictly as a mechanical means of controlling the blowout which occurred in the No. 13-2-1 well.

# CHRONOLOGICAL LOG

## HORSESHOE BEND NO. 13-2-2 (Relief Hole)

- 12-21-64 - Barker Drilling Company rigging up a relief hole approximately 415' from Horseshoe Bend No. 13-2-1. Should spud before noon today.
- 12-22-64 - Picking up kelly to drill rat hole.
- 12-23-64 - Drilling at 145'. Bit #1 (DT) 12-1/4". Dev: 0° @ 120'. Mud: weight 9.1#, viscosity 45.
- 12-24-64 - Drilling at 457'. Bit #1 (DT 12-1/4") in hole. Mud: weight 9.2#, viscosity 46. Dev: 1/2° @ 172'; 1/4° @ 232'; 1° @ 292'; 3/4° @ 381'.
- 12-25-64 - Drilling at 540', 12-1/4" hole. Ran 523.82' of 8-5/8" O.D. (16 joints), 32#/foot, J-55 casing with guide shoe at 1.02', total 524.84'. Set at 536.82' K.B. Cemented with 315 sacks regular with 30% CaCl2. Plug down at 10:15 p.m. Good cement returns. Centralizers at 520', 461.91', 396.57', 329.12', 262.88', and 196.57'.
- 12-26-64 - W.O.C. Nippling up. Pressured up to 1250# for 30 minutes. Okay.
- 12-27-64 - 840', drilling.
- 12-28-64 - Drilling at 1195'. Bit #3 (OSC-3) made 411' in 19-3/4 hours. Bit #4 (DT) in hole. Dev: 3/4° @ 831', 1/2° @ 962', 1/2° @ 1082'. Mud: weight 9.7#, viscosity 45.
- 12-29-64 - Drilling at 1412', pulling whipstock. Set whipstock at 1400'. Drilling 12' off tool with 5-5/8" bit. Will pick up reamer and enlarge hole to 7-7/8". Bit #5 (YT3 7-7/8") made 55' in 3-3/4 hours. Bit #6 (OWC 5-5/8") made 12' in 2-1/4 hours. Mud: weight 9.6#, viscosity 53. Deviation and direction:
- |                  |                  |                  |
|------------------|------------------|------------------|
| 1202' 1/4° N 63W | 1321' 1/2° N 35E | 1400' 3/4° N 79E |
| 2.41' N 1.23 E   | 3.26' N 1.82'E   | 3.26' N 2.82' E  |
- 1400' -3.75' true vertical depth at 1400'. Horseshoe Bend well has been dead 25 hours. Died at 8:00 a.m. 12-28-64.
- 12-30-64 - Drilling at 1472'. Making trip in with long monel collar with near bit reamer to try and stop angle and still change course. Correction - Bit #6 is a Reed YT3. Mud: weight 9.8#, viscosity 50. Dev: 3/4° N 79E 1400'; 2-3/4° S 39W 1440', 1472' 4-1/2° S 45W.
- |              |                        |                        |
|--------------|------------------------|------------------------|
| 1411' 1-3/4° | 1410.94' True Vertical | -3.49 Vertical Section |
|              | S 33W 2.97'N 2.63'E    |                        |
| 1440' 2-3/4° | 1439.91' True Vertical | -2.34 Vertical Section |
|              | S 39W 1.89'N 1.75'E    |                        |
| 1472' 4-1/2° | 1471.81' True Vertical | - .12 Vertical Section |
|              | S 45W .12'N .02'W      |                        |

- 12-31-64 - 1540', Depth. Failed to kick off last night. Presently going in hole to drill approximately 7' of new hole and attempt to kick off again. Dev: 5-1/4° @ 1532' S 42W.
- 1-1-65 - Drilling at 1597'.
- 1-2-65 - Drilling at 1641'.
- 1-3-65 - Tripping at 1697'. Dev:
- |       |         |       |             |
|-------|---------|-------|-------------|
| 1665' | 9-3/4°  | S 70W | (8:00 a.m.) |
| 1694' | 10-3/4° | S 72W | " "         |
| 1725' | 11°     | S 75W | (4:30 p.m.) |
| 1784' | 11-1/2° | S 76W | " "         |
- 1-4-65 - Tripping for new bit at 2058'. Bit #7 (DT) made 264' in 8-1/2 hours. Mud: weight 10.3#, viscosity 58, water loss 4, 2/32" cake. Dev:
- |       |         |       |
|-------|---------|-------|
| 1813' | 11-3/4° | S 75W |
| 1873' | 12-1/4° | S 75W |
| 1934' | 13°     | S 75W |
| 1994' | 13-3/4° | S 77W |
- 1-5-65 - T.D. 2071'. Drill collars stuck at 1585'. Will attempt to back off at 1575'. Spotted 25 barrels of oil; no results. Presently backing off with McCullough. Mud: weight 9.1#, viscosity 65, water loss 4, pH 10.5, 12% oil.
- 1-6-65 - 2180', drilling. Dev: 14-1/2° @ 2132' S 80W. Mud: weight 9.6#, viscosity 65, water loss r, 2/32" cake, pH 10, 1-1/2% sand, 16% oil. Backed stuck drill collars off at 1555'. Ran bumper jars and oil jars. Bumped fish down 2'; recovered fish.
- 1-7-65 - 2439', on trip for new bit. Bit #9 (OSClG) made 210' in 8-3/4 hours. Bit #10 (OSClG) made 171' in 10-1/4 hours. Mud: weight 9.7#, viscosity 54, water loss 2, 2/32" cake, pH 10, 18% oil. Lost approximately 35 barrels mud at 2360'. Dev:
- |         |         |       |
|---------|---------|-------|
| 15-1/4° | @ 2190' | S 80W |
| 15-1/4° | @ 2250' | S 82W |
| 15-1/4° | @ 2308' | S 83W |
| 15-1/2° | @ 2338' | S 83W |
| 15-3/4° | @ 2409' | S 83W |
| 15-3/4° | @ 2439' | S 84W |
- 1-8-65 - Tripping at 2482'. Set tool at 2470'. Decreased angle 1' and direction 9°. Looks like good run. Dev: 16° @ 2469 S 85W, 15° @ 2481' S 76W. Mud: weight 9.9#, viscosity 78, water loss 2.4, 2/32" cake, pH 10, 15% oil.
- 1-9-65 - Drilling at 2538'.
- 1-10-65 - Drilling at 2736'.
- 1-11-65 - 2872', drilling. Bit #13 (Rerun BT2G) made 105' in 4 hours (2481'-2474'). Bit #14 (YT1A) made 162' in 7-1/4 hours (2474'-2736'). Bit #15 (YT3) made 99' in 7-1/4 hours (2736'-2835'). Bit #16 (YT1A) went in hole at 2835'.

1-11-65 - (Con't)

<u>Depth</u>	<u>Drift</u>	<u>Vert. Depth</u>	<u>Section</u>	<u>Drift Direction</u>	<u>Coordinates South</u>	<u>West</u>
2502'	15°	2475.30	220.94	S 73 W	49.64	215.02
2538'	14-3/4°	2510.11	230.10	S 70 W	52.78	223.64
2562'	15°	2533.29	236.29	S 68 W	55.11	229.39
2637'	16°	2605.38	256.88	S 68 W	62.85	248.55
2736'	16-1/2°	2700.30	284.89	S 68 W	73.39	274.62
2761'	16°	2724.33	291.75	S 67 W	76.08	280.96
2810'	15-3/4°	2771.49	304.98	S 67W	81.28	293.21

1-12-65 - Drilling at 3012'. Bit #16 (YT1A) drilled from 2835'-2921' (86') in 9-3/4 hours. Bit #17 (YS1) has drilled from 2921'-3012' (91') in 8 hours. Mud: weight 9.5#, viscosity 51, water loss 2.8, 2/32" cake, pH 8, 3/4% sand, 5% oil. Mud logging unit put into operation at 2921'.

<u>Depth</u>	<u>Drift</u>	<u>Vert. Depth</u>	<u>Section</u>	<u>Direction</u>	<u>South</u>	<u>West</u>
2873'	15°	2832.34	321.23	S 68 W	87.39	308.33
2919'	14-1/4°	2876.92	332.51	S 68 W	91.63	318.83
2967'	13-1/4°	2923.64	343.46	S 68 W	95.73	329.03

1-13-65 - 3172', making trip. Bit #17 (YS1) drilled 132'. Bit #18 (OSClG) drilled 119' in 12 hours. Mud: weight 9.6#, viscosity 69, water loss 4, 2/32" cake, pH 9.8, 1/2% sand, 9% oil.

<u>Depth</u>	<u>Drift</u>	<u>Vert Depth</u>	<u>Section</u>	<u>Direction</u>	<u>South</u>	<u>West</u>
3026'	12-1/4°	2981.30	355.91	S 67 W	100.62	340.55
3085'	11-1/4°	3039.17	367.39	S 69 W	104.74	351.30
3146'	10-1/2°	3099.15	378.48	S 69 W	108.73	361.68

1-14-65 - 3334', on bottom with new bit (#20). Bit #19 (DT2G) drilled from 3172'-3334' (162') in 13-1/4 hours. Mud: weight 9.9#, viscosity 61, water loss 3.5, 2/32" cake, 1% sand, 5% oil.

<u>Depth</u>	<u>Drift</u>	<u>Vert Depth</u>	<u>Section</u>	<u>Direction</u>	<u>South</u>	<u>West</u>
3175'	10°	3127.71	383.51	S 70 W	110.45	366.42
3236'	9°	3187.96	393.03	S 69 W	113.87	375.33
3334'	7-1/4°	3285.18	405.33	S 67 W	118.70	386.72

1-15-65 - Depth 3404'. Awaiting parts to repair burned out clutch on pump.

<u>Depth</u>	<u>Drift</u>	<u>Vert Depth</u>	<u>Section</u>	<u>Direction</u>	<u>South</u>	<u>West</u>
3404'	6-1/2°	3354.73	413.15	S 64 W	122.17	393.84

1-18-65 - Depth 3692'. Lost 75 barrels mud at 3690'-3692'. Mud: weight 9.9#, viscosity 80, water loss 3, 2/32" cake, pH 10.5, 1-1/2% sand, 4% oil. Bit #24 (WT18) made 59' in 8-1/4 hours (3593'-3652'). Bit #25 (OSClG) made 40' in 6 hours (3652'-3692').

<u>Depth</u>	<u>Drift</u>	<u>Direction</u>	<u>South</u>	<u>West</u>
3646'	5-1/2°	S 65 W	132.86'	415.65'
3692'	5°	S 72 W	134.10'	419.46'

1-19-65 - Depth 3692'. Ran I.E.S. and Sonic-Caliper logs. Conditioned hole. Ran Halliburton DM squeeze packer on 2-7/8", 6.5#, N-80, EUE tubing and set at 3399'. Pumped in 25 barrels of mud. Break down pressure 700#, pumping pressure 400#.

- 1-20-65 - Rig on standby with two man crew. All pits full of mud.
- 1-21 thru  
2-11-65 - Rig standing by.
- 2-12-65 - Pumped in 10 barrels of mud to determine if formation is still taking fluid. Break down pressure 1000#, average pumping pressure 500#.
- 2-15-65 - Plugged well as follows:
- 15 sacks pumped below bridge plug at 3400'
  - 5 sacks regular on top of bridge plug
  - 35 sacks regular with 5 sacks sand at 1385'-1500'
  - 35 sacks regular from 586'-486', 1/2 in surface and 1/2 below surface pipe
- Presently stripping cellar. Will release Barker rig and install surface marker when cellar is stripped.
- 2-16-65 - Placed 5 sack cement plug at surface and installed dry hole marker. Rig released at 2:00 p.m. 2-15-65. Well has been abandoned in such a condition so as to allow for re-entry and re-drilling to Uinta gas sand. FINAL REPORT

VERTICAL TESTS  
HORSESHOE BEND NO. 13-2-2

<u>Depth</u>	<u>Degree Deviation</u>
120'	0
172'	1/2
232'	1/4
292'	1
381'	3/4
831'	3/4
962'	1/2
1082'	1/2
1202'	1/4 N 63 W
1321'	1/2 N 35 E
1400'	3/4 N 79 E
1411'	1-3/4
1440'	2-3/4 S 39 W
1472'	4-1/2 S 45 W
1532'	5-1/4 S 42 W
1665'	9-3/4 S 70 W
1694'	10-3/4 S 72 W
1725'	11 S 75 W
1784'	11-1/2 S 76 W
1813'	11-3/4 S 75 W
1873'	12-1/4 S 75 W
1934'	13 S 75 W
1994'	13-3/4 S 77 W
2132'	14-1/2 S 80 W
2190'	15-1/4 S 80 W
2250'	15-1/4 S 82 W
2308'	15-1/4 S 83 W
2338'	15-1/2 S 83 W
2409'	15-3/4 S 83 W
2439'	15-3/4 S 84 W
2469'	16 S 85 W
2481'	15 S 76 W
2502'	15 S 73 W
2538'	14-3/4 S 70 W
2562'	15 S 68 W
2637'	16 S 68 W
2736'	16-1/2 S 68 W
2761'	16 S 67 W
2810'	15-3/4 S 67 W
2873'	15 S 68 W
2919'	14-1/4 S 68 W
2967'	13-1/4 S 68 W
3026'	12-1/4 S 67 W
3085'	11-1/4 S 69 W
3146'	10-1/2 S 69 W
3175'	10 S 70 W
3236'	9 S 69 W
3334'	7-1/4 S 67 W
3404'	6-1/2 S 64 W

Depth

3646'  
3692'

Degree Deviation

5-1/2 S 65 W  
5 S 72 W

D.E. JENNINGS FOR S.L.C. FILE

# HUGHES BIT RECORD

Elevation

SHEET 1 OF 2

FILE NUMBER

FIELD UTAH		STATE UTAH	SECTION 2	TOWNSHIP 21E	RANGE 7S	OPERATOR Pacific Natural Gas		X(1)			
CONTRACTOR BARKER WELL SERVICE	LOCATION HORSESHOE BEND		RELIEF HOLE 13-2-1		SPUD 12-22-64	US 12-26-64	INTER	TOTAL DEPTH DATE 1-18-65	TOOL PUSHER J.W. SHIPLE		
TOOL JOINTS 3	GIVE SIZE & TYPE 1. D.P. 3 3/4 IF 2.	O.D. 4 1/2 O.D.	DRILL COLLARS	NO.	O.D.	I.D.	PUMPS 1. C-150-12 2. FVZ-10	DRAWWORKS & POWER NATION T-12	FUEL DIESEL	WATER Hauled 6 mi.	NO. OF DULLS
SALESMAN	DIVISION	STOCKPOINT NO.	DO NOT USE	STATE	ZONE	FIELD	CONTRACTOR	OPERATOR	DATE	PURCHASER	

DO NOT USE			NO.	SIZE	MAKE	TYPE	REG	JET 32nd IN.	SERIAL	DEPTH OUT	FEET	HOURS	WT. 1000 LBS.	RPM	VERT. DEV.	PUMP PRESS.	NO. 1		NO. 2		MUD			DULL. COND.			DULLS	FORMATION CALL DATES REMARKS
WFR.	TYPE	WC															SPM	LIN- ER	SPM	LIN- ER	WT.	VIS.	W.L.	T	B	OTHER		
	12-22		1	12 1/4	SMITH	DT	✓		32989	457	457	24 1/2		250	3/4	200	55	6 1/2	53	1 1/2	91	45					12/22-Spud	10:30 PM
	12-24		2	12 1/4	REED	YT3	✓		444617	545	88	2 3/4		240	3/4	200	55	6 1/4			92	45					SET 8 5/8"	
	12-26		3	7 7/8	HUGHES	CSC3	✓		68951	956	411	18 3/4				300	55	6 1/4			96	40						
	12-27		4	7 7/8	SMITH	DT	✓		81509	1301	345	15 1/4				400	55	6 1/4			101	52						
	12-28		5	7 7/8	REED	YT3	✓		544151	1400	99	4 3/4			1 3/4	400	55	6 1/2			101	53						
	12-29		6	5 7/8	HUGHES	CWC	✓		82917	1412	12	1			1 3/4	400	55	6 1/4			102	53						
	12-29		7	7 7/8	REED	YT3	✓		544088	1540	140	4				400	55	6 1/4			98	50						
	12-30		RR	5 7/8	HUGHES	CWC	✓		RR#6	1540	-				5 1/2	400	55	6 1/2			96	47						
	12-31		RR	7 7/8	REED	YT3	✓		RR#7	1569	29	1			5 1/2	400	55	6 1/4			98	48						
	1-1-65		RR	5 7/8	Hughes	CWC	✓		RR#6	1581	12	1 1/4				450	55	6 1/4			97	49						
	1-1-65		RR	7 7/8	REED	YT3	✓		RR#7	1599	30					500	55	6 1/4			96	50						
	1-2		RR	5 7/8	Hughes	CWC	✓		RR#6	1611	12	1 1/4				600	55	6 1/4			98	52						
	1-2		RR	7 7/8	REED	YT3	✓		RR#7	1794	201	7 1/2				700	55	6 1/4			97	55						
	1-3		8	7 7/8	SMITH	DT	✓		59991	2058	264	8 1/2				700	55	6 1/4			97	56					STUCK PIPE @ 20'	
	1-4		9	7 7/8	Hughes	OSCIG	✓		16096	2268	210	8 3/4			15 1/4	750	55	6 1/4			96	55	4					
	1-6		10	7 7/8	Hughes	OSCIG	✓		96989	2439	171	10 1/4			15 3/4	750	55	6 1/4			95	58	2					
	1-7		11	7 7/8	SMITH	DT2G	✓		84249	2469	30	2			16	750	55	6 1/4			98	70	2					
	1-7		12	5 7/8	Hughes	CWC	✓		198	2481	12				15	800	55	6 1/4			98	70	2					
	1-8		13	7 7/8	SMITH	DT2G	✓		84342	2574	105	1 1/2		55	15	550	50	7 1/4	53	6 1/2	97	55	4.4					
	1-9		14	7 7/8	REED	YT1A	✓		V45549	2736	162	7 1/4		55	16 1/2	800	50	7 1/4	53	6 1/2	97	63	5.2					
	1-10		15	7 7/8	REED	YT3	✓		544089	2835	99	7 1/4		120	15 1/4	800	50	7 1/4			97	63	5.2					
	1-11		16	7 7/8	REED	YT1A	✓		743270	2921	86	9 3/4		120	14 1/4	800	50	7 1/4			95	53	2.8					
	1-11		17	7 7/8	REED	YS1	✓		V41105	3053	132	13 1/2		100	12	750	50	7 1/4			94	60	4					
	1-12		18	7 7/8	Hughes	OSCIG	✓		96973	3172	119	12		120	10	750	50	7 1/4			96	56	3.5					

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## HUGHES BIT RECORD

SHEET 2 OF 7

FILE NUMBER

COUNTY		FIELD		STATE		SECTION		TOWNSHIP		RANGE		OPERATOR		X(1)				
UTAH		HORSESHOE BEND		UTAH		2		21E		7S		PROVIN-NATURAL GAS EXP.						
RIG NO.	CONTRACTOR			X(2)	LOCATION			SPUD		US		INTER		TOTAL DEPTH DATE	TOOL PUSHER			
-3	PARKER WELL SERVICE				HORSESHOE BEND			RELIEF HOLE 13-2-1						1-1865				
TOOL JOINTS		GIVE SIZE & TYPE		1.	O.D.	DRILL COLLARS	NO.	O.D.	I.D.	PUMPS	DRAWWORKS & POWER		FUEL	WATER	NO. OF DULLS			
				2.	O.D.					2.								
SALESMAN		DIVISION			STOCKPOINT NO.		DO NOT USE		STATE		ZONE		FIELD		CONTRACTOR	OPERATOR	DATE	PURCHASER

[illegible]



# INSTRUCTIONS

**General:** This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

**Item 4:** If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

**Item 18:** Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments. **Items 22 and 24:** If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

**Item 29: "Sacks Cement":** Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool. **Item 33:** Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES: SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF: CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES				38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	MEAS. DEPTH	TRUE VERT. DEPTH
			No cores or tests taken, no geologic tops picked. This well drilled as mechanical means of controlling blowout in No. 13-2-1 well.			